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# Local Entanglements or Utopian Moves: an Inquiry into Train Accidents\*

## John Law and Annemarie Mol

### *British Railways: a National Crisis in Confidence*

In 1996 after nearly fifty years in public ownership the British rail network was privatised. As a part of this what had been single organisation, British Rail, was broken into a set of different units which were individually sold off. Prominent among these were Railtrack plc (owner of the track, stations, signalling and other infrastructure), more than twenty train operating companies (TOCs) which received franchises to run trains (usually with government subsidies), and three companies which owned and leased rolling stock<sup>1</sup>.

This privatisation and the consequent fragmentation was (and remains) controversial. There were successes – traffic and rail use substantially increased after privatisation, at least until the events we describe below, in part because of increased services and improved passenger facilities. At the same time, however, the railway was subjected to intense public scrutiny and criticism. Fare levels, unreliability, delays, poor rolling-stock, overcrowding, lack of co-ordination between the different train operating companies, all of these were the subject of widespread complaint. But our particular interest here is in safety – and a series of more or less serious accidents.

Accidents and incidents between 1996 and early 2001 are listed in Table 1. Some are much more serious than others, but three were particularly significant, both in their scale, and their role in generating a sense of crisis and shaping debate about railway safety in the UK. These are: the Southall collision in September, 1997; the Ladbroke Grove collision in October 1999; and the Hatfield derailment in October 2000.<sup>2</sup> A few words on each.

The Southall collision, in which a high speed passenger train which passed through a danger signal and collided with a freight train, became the subject of a major public inquiry<sup>3</sup>. However, before this Inquiry reported it was overtaken by the second collision between two passenger trains at Ladbroke Grove. This was particularly horrific, with greater loss of life and injury, in part because of the speed of impact and in part because of a devastating fire. The national sense of emergency that followed was also, however, because this accident took place on the same stretch of track (the approach to London's Paddington station) and was the result of a similar error (a train passing a signal at danger). Was there

Date	Location	Deaths	Injuries	Cause
8 Aug, 1996	Watford South	1	6	Signal Passed at Danger, Collision
19 Sep 1997	Southall	7	150	Signal Passed at Danger, Collision
8 Jan, 1999	Spa Road	0	4	Signal Passed at Danger, Collision
23 Jan, 1999	Winsford	0	27	Signal Passed at Danger, Collision
18 Jun, 1999	Cookham	0	0	Near miss on automatic level crossing
5 Oct, 1999	Ladbroke Grove	31	414	Signal Passed at Danger, Collision
18 Oct, 1999	Lewes	0	0	Signal Passed at Danger, Collision
17 Oct, 2000	Hatfield	4	70	Derailment caused by broken rail
19 Oct, 2000	Stafford			Derailment caused by broken rail
26 Oct, 2000	Virginia Water			Derailment caused by slippery rails
1 Nov, 2000	Bristol			Collision caused by brake failure
28 Feb, 2001	Selby	10	70	Collision caused by road vehicle

Table 1: Recent Railway Accidents in the UK<sup>4</sup>

something systematically wrong with the organisation and the management of the British rail system? This was the question. The accident led to a further public inquiry which became a forum which explored not only the proximate causes of the crash, but also possible background factors including management style and competence, the role of privatisation, the relation between profit and safety, and the commercial and organisational fragmentation of the railway system<sup>5</sup>.

Public confidence in the railway system, already seriously undermined as a result of these two accidents, suffered a coup de grace with the derailment which took place about a year later at Hatfield in October 2000. The circumstances of this accident were quite different. A train travelling on an open stretch of track in the countryside north of London was derailed at about 185 kilometres per hour. The first three vehicles stayed on the track, the middle coaches stayed upright, but the buffet car towards the end of the train fell on its side and part of its roof was ripped off. It rapidly became clear that the accident was caused neither by driver nor signal error, but rather by rail failure. A length of rail about 35 metres long had simply disintegrated into approximately 200 pieces as the train passed over it<sup>6</sup>.

The immediate result was a decision by Railtrack to impose draconian speed restrictions on large parts of the British rail network while it inspected the track and re-railed where necessary. The consequence was chaos. For many weeks there were no published train timetables for any part of the UK. Journeys took twice or three times as long as before the restrictions – and were often altogether impossible.<sup>7</sup> As thousands of kilometres of track were inspected, and hundreds of kilometres replaced, system timetables were still slow and disrupted more than six months after the derailment. More generally, the industry was widely seen as having suffered a major setback in terms of financial and passenger growth, and public confidence. Tensions between the train operating companies

and Railtrack, usually well-concealed, were surfacing regularly in the media, and Railtrack started to suffer considerable financial stress – stress which, about a year later, was to lead to it being put into receivership.

### ***Interlude: the Good***

What to make of this sorry tale? We do not comment directly on rail safety in this paper (though our argument has some implications for this<sup>8</sup>). Instead we are interested in what philosophers call ‘the good’. Train accidents signal a lack of good: they offer participants and observers an occasion to mourn, to regret, and to find fault. But how? Philosophy has a rich tradition of painstakingly seeking to establish standards for ‘the good’: good technology; good knowledge; good management; good policy; good action. Here, we work differently. Instead of seeking to frame ‘the good’ ourselves, we explore how others go about this task.<sup>9</sup> For this is an everyday activity. Attempts to differentiate between errors and achievements, failures and successes, falsehoods and truths, problems and solutions, or catastrophes and triumphs (the terms vary), are not the prerogative of a specialist academic discipline. Most everyday practices make use of, or try to create, scales to measure or contrast ‘goods’ and ‘bads’. This opens a space for an empirical philosophy. An ethnographic interest in practice can be combined with a philosophical concern with ‘the good’ to explore which ‘good/bad’ scale is being enacted, and how this is being done<sup>10</sup>. It is the latter question we engage with here: the mode of handling ‘goods’ and ‘bads’ in the context of the various British railway accidents.

Thus the Selby crash aside, the accidents were not treated as an act of fate. They were set up, instead, as a consequence of human failure. For instance, this is Finn Brennan, East Finchley branch secretary of the train driver’s union, ASLEF, after Ladbroke Grove:

‘What makes me most sick and angry is when they talk about the “accident at Paddington.” That was no accident. It was no accident that ATP [Automatic Train Protection] was not put in. It was a political and financial decision. Railtrack managers have blood on their hands.’<sup>11</sup>

This is an accusation. Particular actors are being accused and called upon to justify themselves and account for their actions. And we will argue that this is a utopian mode of engaging with ‘the good’. This is because with the loss of the irony implied in the origins of the term ‘utopia’, utopian modes for dealing with the good came to suggest that perfection is possible: that the absence of good is not necessary. Thus they evoke the possibility of a tension free zone: a place or a situation where there are no clashes between what one might call, in the plural, different goods. And with this comes another characteristic feature: utopian modes of dealing with the good are necessarily discursive.

We are saying, then, that in utopian modes ‘the good’ is disentangled both from other goods and from the practicalities of non-discursive life. Material and

practical entanglements make it impossible to serve a single, purified ‘good’<sup>12</sup>. Such entanglements do not sustain utopias. There are, however, other modes of dealing with ‘the good’ as well. In complex, mundane, material practice ‘the good’ tends to figure as something to tinker towards – silently. So this is our position: that while utopian modes of relating to the good pose as really good, as better than best, we are suspicious of their disentangled discursivity. In a world where verbal justification and numerical accounting have become increasingly important, stressing the specificities of non-discursive practice and speaking up for silence are becoming matters of urgency. Instead of seeking to purify systems with more and more ‘rationalisation’ it would be better to attend more to the complexity of sites and situations where there are many goods which are sometimes incompatible and may even be inarticulable.

### ***‘ATP is the Only Way of Getting the Drivers to Stop’***

The Selby derailment in February, 2001 was caused by a vehicle running down a motorway embankment onto a main-line railway track. It rapidly became clear that this vehicle had left the road at a point before the crash barrier precisely intended to stop such an incident – which meant that it had travelled a long way, perhaps 50 metres, before coming to rest. The result was an accident widely regarded as ‘freakish’<sup>13</sup>:

‘... at this stage the accident appears to have been just that, a dreadful concatenation of random events. Subtract any one of them – the vehicle leaving the road a moment later, the freight train a moment earlier – the result might have been altogether different.’<sup>14</sup>

Even so, the accident quickly produced its crop of bright ideas and questions. For instance The Guardian printed seven letters about the Selby accident two days later on March 2<sup>nd</sup>. Amongst these, two suggested that road traffic in general was a bad, one doubted the efficacy of motorway safety barriers, one suggested that Railtrack and the Highways Agency had not undertaken a ‘proper risk assessment’ of barriers on roads close to railways, one imagined the need to fit seat belts in trains, and one asked why a freight train was in any case carrying imported coal through the middle of the huge South Yorkshire coalfield.<sup>15</sup>

What is interesting about these letters is that in a few column inches we discover at least six different versions of the good and six implicit demands for justification<sup>16</sup>. The implication was that someone should have known, someone should have done better, someone had failed. And the overall public coverage of Selby also generated numerous versions of the good. In the guise of news reports possible reasons for the scale of the accident were rehearsed. There was plenty of talk of the need for crash barriers:

‘Questions will have to be asked about the condition of the road surface and the roadside barriers on the bridge at the time of the accident, and about the strength of

Barriers on roads that take large volumes of traffic above other highways or railway lines'<sup>17</sup>.

Then there were comments about the means of escape from trains after accidents:

'However, there were calls for a review of barriers to protect roads and track, especially high-speed lines, and of methods to escape from crashed carriages'.<sup>18</sup>

Doubts were expressed about the absence of a heavy locomotive at the front of the train:

'Crash investigators were examining whether the 30-tonne driving car on the GNER express had sufficient weight to be leading the train and whether the train would have remained on the rails if the 80-tonne locomotive had been leading, instead of being at the back.'<sup>19</sup>

And questions were raised about procedures for alerting drivers if vehicles fall onto the track, including train-mounted radar equipment and other methods:

'In France they have a system of trip wires, so that if a vehicle falls off a bridge trains are automatically brought to a halt. Could we not implement such a system here?'<sup>20</sup>

These, then, were some of the suggestions or questions raised in and through the media in the two or three days immediately after the Selby collision. They differ, but they share a tone of indignation. They all suggest that there was a single weak point in the system that should not have been there. The accident was 'unnecessary' because it might have been prevented. Easily.

The Hatfield accident was not caused by an obstacle on the line, but by a broken rail. In the media coverage afterwards questions were asked about why the track was not replaced after cracks were detected in the rails. Some of the responses were interesting. Responsibility (it was said) lay in part with the way privatisation had shifted repair work from a single organisation to an army of contractors and subcontractors, working to tight deadlines and costings, in an antagonistic contractual culture:

'The first consequence was the breakdown of the old comradeship, which used to mean that problems were easily spotted, repairs made, and people could talk to each other. Track workers operated in gangs and knew their stretch of rails like their own back gardens. Instead, workers became nomadic, moving to the next job with little or no local knowledge and instructions not to talk to rival workers except via a supervisor miles away.'<sup>21</sup>

Another good, then, is being evoked here. This does not have to do with better road surfaces, roadside barriers, leading locomotives, or trip wires. It has to do with comradeship and group solidarity. Written down in this way it seems so obvious. But why? Perhaps this is because it has been disentangled from the complexities that led to changes in work practice in the first place; or perhaps it is because it is simply detached from other goods, full stop. As are the claims, in

the context of reporting on the Ladbroke Grove and Southall collisions, about another equally self-evident solution, that of ATP (Automatic Train Protection System):

‘Experts believe ATP could have prevented both disasters. Tony Cima, 46, from Stroud, Gloucestershire, who attended [... a] rally [in London], survived the Paddington crash last month. He said he still had awful memories of the accident. "The worst thing was being unable to help people, I could have done more for them," he said. "ATP is the only way of getting the drivers to stop. We don't want a cheapskate alternative." Campaigners want better rail warning systems.

Addressing the gathering, London mayoral hopeful Ken Livingstone said: "The more you look at Railtrack's involvement in the railways, the more it looks like a gravy train for its investors and less like a modern integrated train service for the public."<sup>22</sup>

This kind of argument spilled over the pages of the papers. ATP was not installed but it should have been. If it had been, then the accident would certainly have been prevented. But then, if we go back a little bit to December 1998, we find the papers overflowing with a quite different public preoccupation:

‘On Wednesday the Commons Transport Committee said the Mark I carriages – some of which date back to the 1960s – posed a danger to passengers. There are still about 2,000 of these doors in service.’<sup>23</sup>

In public discourse not very long ago, then, it was slam doors that were a bad, bad for safety<sup>24</sup>.

### ***The Dis/Entanglements of Panaceas: Mobile Utopianism***

Over no more than three years the location of failure, and of the solution needed to put it right, has moved many times. The ‘good’ evoked in media coverage of train accidents, has shifted between crash barriers, ATP, carriage and especially door-design, and procedures for detecting and correcting metal fatigue in rails. We could extend the list. But what is important here is that at the moment they are voiced, these ‘goods’ are all pressed with singular urgency. And to stress the urgency the papers do not just let the experts speak on, say, ATP, but seek the spokespeople whose concerns we are most likely to respect. For instance, accident survivors. But, however much we may want to support (and believe) someone whose right to talk grows out of his or her physical suffering, there is a problem here. This has to do with the relation between the different goods. Where does one good leave the others? Where does ATP leave the issue of rail metal fatigue? Or slam doors? Or any of the other elements that are crucial to railways? Juxtaposing quotes about virtues, however virtuous each of them may individually be, has a very specific overall effect in the context of public debate.

Taken by itself each ‘good’ seems to call for total commitment. Any deviation from such total commitment is inappropriate. With the benefit of hindsight,

it is cast as something that might or should have been foreseen. Any specific deviation is treated as an accountable failure in responsibility. But in combination the various accusations produce a different effect. Taken together they evoke a 'good' that is multiple as well as mobile. The juxtaposition of complaints generates multiple versions of the good – and more or less effortless moves between them.

Since each 'good' is presented in a further newspaper article, and since such articles are read one by one, separately, no requirement of discursive consistency is imposed. Each version of the good is thus disentangled from all others, a discursive island unto itself. And the various 'goods' are not just disentangled from each other, but also from any executive responsibility. In the media it is possible to propagate versions of the good without any commitment to seeing them through into action or policy. Thus we are confronted with something which we might think of as mobile utopianism. This is a mode relating to 'the good' that disentangles itself from discursive coherence and material embeddedness, while imposing a rapid but constantly shifting insistence on accountability.

### ***'A Cold, Distasteful Evaluation'***

The Ladbroke Grove Rail Inquiry was set up in the aftermath of the Ladbroke Grove collision. This, as we have noted, was particularly horrific. Many were killed, and many of the survivors were grievously injured, some in the fierce fire which followed. No-one involved with this accident was anything other than shocked. In order to prevent an accident like in the future it was important to learn what went wrong and make sure that it never happens again. Such was the purpose of the Inquiry. It was established to explore both the proximate and the background causes of the accident, and make specific recommendations for subsequent executive action.

Under an experienced Scottish judge Lord Cullen, the Inquiry was quasi-judicial in form. Barristers representing both the Inquiry itself and various interested parties including victims and relatives of the bereaved, the companies involved, and relevant trades unions, presented evidence. The Inquiry took statements and called witnesses who gave verbal testimony and were cross-examined. The proceedings were open and widely reported, with public access, a press gallery, and a web-site.<sup>25</sup> The web-site offers outsiders access to the high density zone of the Inquiry, where in a well delineated place and a comparatively short space of time a variety of modes of relating to 'the good' were brought together.

One mode for handling the 'good' is introduced into the Inquiry by the Ladbroke Grove Solicitors' Group which represents the victims and families of the bereaved. Here is the group's barrister, addressing the Inquiry

'Our clients want to hear in this Inquiry how the Thames Trains' directors justify their decisions. They want to hear too why it was that, without seemingly a whimper, Railtrack and Her Majesty's Railway Inspectorate as the safety authorities allowed Thames Trains to decide not to fit ATP.'

We came across ATP (Automatic Train Protection System) above. In this a computer on board a train, processing data about signals and track conditions (such as fixed speed limits), overrules the driver if s/he is going too fast, and stops the train or slows it to a safe speed. The High Speed train in the Ladbroke Grove collision was fitted with ATP though this was not switched on. The Thames Train (which passed the red light) was not. But – here is the nub of the argument – it appears that had the Thames Train been fitted with working ATP the accident would have been avoided (the same is not the case for the High Speed Train where its operation would have made much less difference)<sup>26</sup>. So why was it not fitted? This was a crucial question for the Ladbroke Grove Solicitors' Group. To quote their barrister again:

'Now, with the tear-stained benefit of hindsight ... even on the basis of a cold, distasteful evaluation of £2.5 million per life lost, the benefits of fitting ATP must far outweigh the costs. They wait to hear Thames Trains' commitment that costs will no longer be an obstacle.'<sup>27</sup>

Cost, we are learning, should not be an obstacle to safety. Safety should be prioritised. It is a greater good than any other. And if ATP is a means to this end, it is called for immediately. In other locations survivors of the crash also speak up as advocates of ATP. Three examples:

'ATP MUST be fitted on all lines, and the trains using them, where train speeds frequently exceed 75 mph or where there are heavy freight trains. This means on all lines except rural branch lines. TPWS must be fitted to the remainder. ATP must be fitted immediately to all trains that frequently run over lines already fitted with ATP.'<sup>28</sup>

'As one of the Paddington crash survivors, 82-year old Eric Skentelbery, stated: "Money takes second place to lives. What does a billion pounds mean anyway? If you lose a battle it is the general's fault not the soldiers."

'Another survivor, Amanda Williams from Wokingham, said: "It is totally ludicrous. Train companies are making a huge profit so why are they not investing it back into the system? We should have bought the fail-safe safety network ATP. It may have cost £750million but what price do you put on a human life?"'<sup>29</sup>

The trades unions made also similar arguments.

'Shunting responsibility on to a dead driver brought an angry response from union leaders with Bob Crow, an assistant general secretary in the main RMT union, accusing the companies of trying to "wash their hands" of the tragedy. "Blaming the staff is not good enough. We will always get human error but you have to look at why this happened," said Mr Crow. "If Automatic Train Protection [ATP] had been fitted this would never have happened. Railtrack has refused to install it because it costs money. "The human cost of failing to protect passengers and workers is now enormous. The travelling public knows where the real blame lies."<sup>30</sup>

### ***The Dis/Entanglements of Absolutism***

Two things are going on here. First, there is an argument which says that Thames Trains (and other railway companies) could well afford to invest in ATP: it was

only greed which stood in the way. And second, there is an argument which suggests that it is simply inappropriate to value human life in terms of money at all: cost-benefit calculations are outright inappropriate. We will deal with the first approach later. Here we are concerned with latter, the idea that human life does not have a money value and that to calculate it in this way is 'cold' and 'distasteful'. This suggests that human life is beyond evaluation, an absolute, and an absolute good – which means, in this context, that an investment in ATP (or some other appropriate safety system) is also an absolute good.

The idea that human life has absolute value co-exists very uneasily with the cost-benefit world of the management of Thames Trains. Indeed, it co-exists very uneasily with the idea of cost-benefit analysis. The consequence is that it is discursively dangerous to raise doubts about safety measures in a context where such a commitment to absolutism is able to shape debate. Indeed, the then head of Railtrack, Mr Gerald Corbett, came unstuck on just this issue when he talked about the pursuit of perfection, and by implication rail safety in the following terms:

'... in commercial life and in big organisations things are not perfect. It is a journey and you never, ever arrive at the destination.'

This unfortunate choice of words, which provoked tears and outrage, greatly contributed to his resignation a week later on November 17<sup>th</sup> 2000.<sup>31</sup>

A mode of relating to the good that has trouble co-existing with others deserves to be called absolutism. Reminiscent of Max Weber's value rationality (wertrationalität), it implies a logic of black and white<sup>32</sup>. Of clear right and clear wrong. A single version of the good and the attempt to strive after it, after perfection. To be able to adhere to this a set of clear moral, organisational and technical certainties is required. This means that certain and specific kinds of objects, processes and realities are relevant means because they help us to think about, articulate, and implement this absolute version of the good. Here (but this is just one version of absolutism) human life and then by implication, the ATP system. Such are the links, the relevant links, the relevant entanglements, in constructing this particular version of the good.<sup>33</sup> And then it follows that everything else – any other link or possible entanglement – is inappropriate. Not simply arguments about cost, but anything that tends to undermine human life (for instance real or supposed technical or managerial incompetence) has to be disentangled, separated. Absolutism is about disentangling one value, here human life, from anything which tends to dilute its incommensurable value.

This, then, is utopian absolutism. It is an absolutism utopian in character because it will never be achieved. It may lead to the resignation of managers, but however great the executive implications of the Inquiry, its recommendations will not be based on an absolutist commitment to the value of human life. So what is going on here? Traditionally absolutism was a prerogative of the high and mighty, the governmental style adopted by a particular kind of monarch. But this is no longer the case in the context of an Inquiry where it is introduced into debate by victims, survivors, family members and their barristers. It is intro-

duced because this may be the only way for such relatively powerless participants to get themselves heard. If they don't treat their own lives (and the lives of those they have lost) as having absolute value, then who will treat them as having any value at all<sup>34</sup>? For safety easily gets lost or devalued when other goods come crowding in – or so those who use absolutist arguments tend to fear. Here is The Guardian:

'At the inquiry into the Clapham rail disaster of 1988, before railway privatisation, British Rail publicly expressed its commitment to "absolute safety" saying that this "must be a gospel... paramount in the minds of management". Yet immediately on privatisation this commitment was abandoned. Instead of talking about absolute safety, the newly created railway companies such as Railtrack and Great Western trains began to talk about cost benefit analysis and the value of saving a life.'<sup>35</sup>

### ***'A System that Needs Balancing'***

After the Hatfield derailment in October 2000 the national inquiry into the state of the railways in the UK continued with added urgency. As a part of this, the House of Commons Select Committee on the Environment, Transport and Regional Affairs Committee met shortly after that derailment to question Mr. Corbett and two of his colleagues about Hatfield and Railtrack's response<sup>36</sup>. They were asked about the Railtrack stewardship of the rail network – of how it had tackled its management task. The point was to find out if they had done so well – or not. But what is to manage well, what 'good' is important in this context, and how is it handled?

'the railway is a system, and of course we want cost reduction, everyone wants it to be more efficient, everyone wants better train performance, everyone wants better safety, everyone wants more trains, but it is a system that needs balancing ....'<sup>37</sup>

What is striking here is that it is not just a single 'good' that is being mentioned, but a series of them. Cost reduction, efficiency, train performance, safety, more trains. This variety of 'goods' is not distributed between different articles, sites or situations. They are being brought together in just a few lines as part of a 'system that needs balancing'. The metaphor of balance recurs:

'What we have actually done [by imposing speed restrictions and checking the quality of the track] is reduce the likelihood of a broken rail, but, at the same time, of course, we have also reduced the train performance. And, if you think about it, there is a complex balance between speed, punctuality, number of trains on the network and safety, and that is, I believe, harder to manage now than it was; but that is the challenge, that is what we have to do'.<sup>38</sup>

A 'complex balance'. And there are other metaphors that do similar work. Mr Steve Marshall, Mr Corbett's successor, talks of 'juggling':

FT: '...customers, dealing with the regulator, politicians, all the rest of it. How are you going to prioritise or balance that? How do you approach that wide range of things you have to do?'

Marshall: 'It's always going to be a huge juggling act. That is what Railtrack is, and therefore it's how you best manage that juggling act. But I hope we signalled two of the key priorities in the board changes that I announced within two days of taking the job. One is the focus on the customer ... The other ...is really emphasising beefing up our engineering skills'<sup>39</sup>

Management is a matter of complex balance, a 'huge juggling act'. But this begs the question of how the various 'goods' that need to be balanced relate together. Are they consistent, or can they be rendered so? This is an open question. Here's the House of Commons Select Committee:

'It has been suggested that there may be conflict between passenger and freight growth, demands for better train performance and requirements for a greater emphasis on safety. Mr Corbett told us that fragmentation of the rail industry at privatisation has made it more difficult to resolve that conflict. Conversely, the Rail Regulator has argued that "a safer railway is where trains are well-maintained and run on time on a reliable infrastructure; good management of performance and safety are entirely consistent and inseparable".<sup>40</sup>

In an absolutist mode, the pursuit of profit and the pursuit of safety are simply incompatible. The Rail Regulator, however, takes what he calls 'performance' and 'safety' to be not only consistent, but, more strongly, inseparable. Mr Corbett is somewhere in between. The relation between the different 'goods' of profit and safety is indeed in tension, he says, and it has become more difficult to resolve that tension than it was in the past – but this what managers are paid to do: to balance and to juggle. There is tension between the goals (the different goods at hand pull in different directions) but compromise should be sought (it is possible to put together an arrangement which will somehow hold them together)<sup>41</sup>. Here is Mr Corbett underlining this once again:

[Q] 'So would you agree with the Regulator when he said, in the Financial Times, "good management of performance and safety are entirely consistent and inseparable"; would you agree with that assessment?

(Mr Corbett) I think that if you overemphasise one particular part of the equation you affect the other part, and I think that good management is about balancing it'.<sup>42</sup>

But how is balance achieved? This may be done by exercising judgement. Here is Mr Corbett responding to a hostile question from a member of the Select Committee:

'[Q.] How many times do people at Railtrack have to fail before they are asked to resign?

(Mr Corbett) That is an impossible question to answer. I have changed quite a lot of people at Railtrack, and this is one of the fundamental problems you have; how fast do you go. On the one hand do you go slowly because you want to preserve the railway skills; on the other hand do you want to go fast because you want to try to make it better and respond to the challenges.'<sup>43</sup>

On the one hand. On the other. Judgement juxtaposes different aims in terms of specific and local considerations. There are no general rules. Even if, along-

side judgement, balance may also be achieved by mobilising ‘equations’ (as Mr Corbett revealingly suggests above). For instance, there was the algorithm used by Thames Trains to determine that it was economically unjustified to put ATP into its trains<sup>44</sup>. Managing is full of algorithms. Here is Mr Corbett gesturing at another in the course of the Ladbroke Grove Inquiry:

‘The regulatory economics of Railtrack’s affairs and how we charge for train paths and the true marginal cost of those train paths is extremely complex and it is inconceivable that anyone at that [junior] level of the organisation had the remotest idea, quite frankly.’<sup>45</sup>

Train paths, income from train paths, the marginal costs of train paths, consequent investment decisions – he is telling us that all of these can be calculated by someone who, by training, has become sufficiently sophisticated. If one knows how they can all be taken into account.

If managing is a matter of balance, brought about by judgement and calculation, then something that goes wrong depends on an ‘unbalanced’ decision. For instance, was Railtrack right to close the main line between Glasgow and England at a few hours notice for three days in the immediate aftermath of the Hatfield derailment? Many, including Mr Corbett, thought not. They thought that the ‘broader issues’ (read goods other than that of safety) were not taken into account:

[Q] ‘So do you think in this instance that we have got a situation where local managers panicked, and subsequent evidence suggests that that was the case, because there was nothing found that was wrong in that section, was there?’ (Mr Corbett) ‘Whenever you ultrasonically test you do find defects, and then you deal with the defects. I do not think they panicked, I think they interpreted an instruction in a particular way without thinking about the broader issues, and I think it was unfortunate that there was not more communication.’<sup>46</sup>

This suggest that, if the ‘local managers’ erred, their error was to move too far in the direction of absolutism, a perfectionist commitment to safety. They should have taken more than just a single ‘good’ into account – or their superiors, with their broad overview, should have told them to do so.

### ***The Dis/Entanglements of Managerialism***

Managerialism is a method for responding to the idea that we live in an imperfect world. Indeed it is a way of responding to the idea that we live in a doubly imperfect world. First, it is imperfect because we may make the wrong judgements or the wrong calculations, as in the case of the closure of the Glasgow west coast line. This is always likely to happen because circumstances may change, indeed can be expected to do so, chronically. And second, the world is imperfect because, more generally, we cannot in any case have overall perfec-

tion. Such is the nature of a trade-off. Too much of one good undermines some other good. Too much safety, not enough trains. So there is no black and white. Instead the world is irreducibly complex, impure, multiple.

Max Weber again catches the logic at work here:

‘Action is instrumentally rational (zweckrational) when the end, the means, and the secondary results are all rationally taken into account and weighed. This involves rational consideration of alternative means to the end, of the relations of the end to the secondary consequences, and finally of the relative importance of different possible ends.’<sup>47</sup>

The crucial phrase here being: ‘the relative importance of different possible ends’. So the issue is one of judgement, of finding ways of drawing together different and heterogeneous materials and goods. And then possibly (though not necessarily) as a somewhat separate issue, of articulating and justifying their temporary, relative importance, their momentary balance<sup>48</sup>. For managerialism justifies to others (shareholders, regulators, government ministers, committees of inquiry).<sup>49</sup> But (as various commentators on the topic of reflexive modernity have noted) managerialism also chronically takes the measure of the different and irreducible goods and accounts for the way it balances between these, not only to others, but also to itself.<sup>50</sup>

In managerialism as in mobile utopias, there are no absolute substantive goods. Instead their multiplicity is acknowledged. There is, however, a commitment to action, to seeing things through. This commitment is absent in mobile utopianism but is shared with absolutism. However, unlike absolutism, managerialism knows no fixed links. Every substantive link, connection and commitment is assessed for its current salience and may either be retained or abandoned. ‘All that is solid melts into air.’ But since managerialism is always reassessing, this implies dedication and skill in discursive justification: the mobilisation of materials of all kinds. Technical objects, financial calculations, organisational practices, employee relations, politicians – managerialism entangles itself with all of these. They all have to be held together in an iterative and reflexive process of heterogeneous engineering and reflexive justification. There is only one fixed point: the ability to articulate and evaluate one’s actions. Which suggest that in managerialism one good is, in the end, more equal than the others. It is a good that tends to be set aside as non-substantial, ‘merely’ procedural, a question of method. It is the all but unquestionable good of being accountable for one’s judgements.<sup>51</sup>

Unlike absolutism, managerialism is not a way in which those with little power can hope to get themselves heard at an Inquiry. Instead it is reflected in the very format of inquiries. For whatever specific form these take, they are always arenas where a variety of actors are pressed into articulating what they judge to be relevant. And once they are articulated, all these issues can then be taken into account by a judge, a chair or a committee in the form of a ‘report’ that offers a well balanced judgement about how to prevent similar disasters from happening again.

***'On that day I could not recollect the time at all. It was just over so quickly.'*<sup>52</sup>**

About twenty-five kilometres from the site of the accident in Ladbroke Grove is the Slough Electronic Control Centre. Here signal men, poring over terminals and keyboards connected with tracks and signals, control the trains into and out of Paddington station – and for many kilometres beyond. Like Mr Corbett and his colleagues, these men ended up giving evidence to the Ladbroke Grove Inquiry. The major question here was what happened in the few seconds between the moment it became clear that the Thames Train had passed a signal at danger and the instant of the collision itself. The issue was whether the signallers could have done anything to avert or reduce the scope of the disaster. And, as a preliminary to this: what did they actually do?

One account of those critical instants – between twenty-one and twenty-five seconds – would run so:

1. Mr David Allen, the signaller at the relevant workstation wasn't actually looking at the screen when the Thames Train went through the red signal. Instead, since the signalling was automatic, he was reading some important update documents.
2. When the train went past the signal, the audible alarm went off – a tweeting sound that immediately attracted the attention of all three signallers in the control-centre.
3. Hearing the alarm, Mr Allen looked at a special display, the 'alarm screen' to see what kind of alarm was involved (the audible alarm warns of seven different kinds of danger, only one of which is a train passing a signal at danger). The alarm screen told him that it was, indeed, a signal passed at danger (SPAD) – and he shouted 'We have a SPAD' to his colleague in the control centre, Mr James Hillman.
4. Then he looked back at the main 'schematic' screen to identify the particular signal that had been passed at danger and find out which train had done so (there were numerous other trains on the move that morning).
5. Next, expecting to hear on the cab secure radio telephone from the driver of the train that he realised his error and had stopped, Mr Allen looked again at the schematic screen and saw the display change once more. This time it showed that the Thames Train had moved into the next block of track beyond the signal. This again triggered the audible alarm.
6. With this information he realised that he was dealing not, as he had expected, with a train that had not quite stopped in time at the signal but had nevertheless come to a halt safely some distance further on. Instead he was dealing with a 'runaway train'.
7. He looked back at the 'schematic screen' and saw the visualisation of the other train, the High Speed Train. At this point he realised that there was imminent risk of a collision between the two trains.

8. He set the appropriate signal to danger for the High Speed Train. This was a manoeuvre that involved shifting to an alternative and more detailed display, in which he used a trackball (It turned out that the train had already passed the signal in question, and it was too late)
9. His colleague in the box, Mr Hillman, had by now left his own workstation to join Mr Allen, and was sending out an emergency stop call to the Thames train – an operation which involved half a dozen keystrokes on the keyboard.
10. Mr Allen then set further signals to red to stop other trains entering the Ladbroke Grove area – again using the trackball – and put in place a series of safety interlocks to hold those signals at red.
11. And then they watched with horror – and finally shock – as they realised it was all too late. Barring an act of God, the two trains were going to collide.<sup>53</sup>

Did Mr Allen and his colleagues act as they should have?

“If a train passes a signal at danger without authority the signaller must immediately arrange for the movement to be stopped by the most appropriate means and take any other emergency action.”<sup>54</sup>

This is one of the relevant rules. But did they follow it? Did they act ‘immediately’? And did they act using ‘the most appropriate means’? Some thought not. This is from the closing statement of the Thames Trains barrister:

‘The evidence of the signallers is most troubling and gives rise to serious concern. Central to it, in order to send an emergency stop message to Driver Hodder [who had passed the signal at danger], what was required was to make just five key strokes on the keyboard. The evidence is that that can be performed in no more than two seconds. ... assuming that Driver Hodder responded promptly, an emergency ‘stop’ message sent up to 17.55 seconds after he passed signal 109 would have had the effect of preventing the collision.’<sup>55</sup>

The suggestion is that Mr Allen didn’t do this. Instead he delayed<sup>56</sup>. More than a few times in the course of the Inquiry he indeed appears defensive about this. Here he is being asked whether there were (as data tapes seemed to suggest) indeed between twenty-one and twenty-five seconds between the alarm going off and the collision itself.

‘Q. Does that timing match your recollection of events?’

A. Yes. I would say, yes, but I cannot recollect the time factor. It is all very well saying that you have got, you can actually map minutes or seconds. At the time, during the time that was happening I couldn’t recollect the time at all.’<sup>57</sup>

And here is another example of his vagueness, again about time:

‘Q. Are you able to help us as to how long it took you to attempt to alter those points?’

A. I can’t say for sure, sir.

Q. Well, are you able to give us any estimate?

A. All I can say, sir, is it is seconds. There was too much going on at the time to actually record any time.’<sup>58</sup>

The indeterminacy about time sometimes comes with indeterminacy about the order of events. Here is another of the signallers, Mr Thomas Siddell:

‘Q. Mr Siddell, did you actually go to workstation 1 after Mr Hillman had been there?

A. Yes.

Q. How soon after?

A. To be honest, I cannot really remember if it was before I silenced the alarms on my workstation or after.

Q. But by the time you----

A. I think it was after, because I went across to relieve Dave [Allen], to chase him off the way because he was shocked.<sup>59</sup>

### ***The Dis/Entanglements of Tinkering***

The suspicion that speaks from the questions is that Mr Allen and his colleagues, in a state of shock after the accident, realised that they should have tried to contact the Thames Train driver more quickly. If so, then their vagueness about time and the order of events signals defensiveness mixed with distress (Mr Allen was reduced to tears at the Inquiry). The Cullen Report itself suggests that there was undue delay.

‘If management had applied the lessons of past SPADs, and if signallers had been adequately instructed and trained in how to react to a SPAD, it may well be the case that the signaller would have been able to send the emergency message in time to enable Turbo to be brought to a halt before it fouled the path of the HST.’<sup>60</sup>

Whether or not this is right (and it is contested by the official account by the Health and Safety Executive<sup>61</sup>), something else is going on, too. This is that the Inquiry requires of the signallers that they translate their daily work into a set of clear and distinct answers to definite questions. That they translate a fairly seamless flow of action, a set of practices embedded in a specific material location, from that location into a setting that is quite different in character. That they disentangle themselves from screens, tracks, noises, coffee breaks, working hours, false alarms, and shock, and entangle themselves with words that are supposedly ‘about’ these.

If, as is the case, discursive justification is the predominant style of an Inquiry then this implies that those who speak there have to meet various requirements. They have to speak. Their speech has to show overall discursive coherence. And it cannot just flow on, but has instead to separate out events and order them. Speakers have to commit themselves to discursive distinction and discrimination. Here is Mr Allen responding to the question of a barrister:

‘You have been describing a process that involves identifying the problem, analysing a situation, taking a decision and acting on it. Now, in one of your statements you have talked about monitoring and determining the overview. Did you mean anything different from what you have been telling the Inquiry by that?

[Mr Allen] No, sir<sup>62</sup>

So on the one hand we have Mr Allen talking of ‘monitoring and determining the overview’. On the other hand we have a barrister who talks about ‘identifying a problem’, ‘analysing a situation’, ‘taking a decision’ and ‘acting on it’. The difference between the two glosses is subtle, but it is also real. The barrister’s talk performs a greater degree of discursive decomposition. It creates more discrete units. Further it strings these out more clearly through time. And as a part of this it identifies a moment of decision, a moment that follows appropriately once a problem has been first identified and then analysed. The model of judgement being offered is linear. And at a particular point (the point of decision) everything comes together. All of which is in contrast to Mr Allen’s own characterisation of the events in question. Less discursively decomposed, it produces fewer units, its timeline is not so clear, and in particular there is no discrete moment of decision.

When asked about this in as many words, Mr Allen agrees that his account and that of the barrister mean the same thing. He accepts the barrister’s translation of his words and does not insist on the difference between them. Despite this, we would like to insist that they are different. This is because it leads us to a further mode of ‘doing good’, and one that is not utopian, if only because it is non-verbal in character. For it is a striking characteristic of the practice Mr Allen’s tries to present to the Inquiry that its specificities are not primarily linguistic. Words form a part of it, but they are as likely to be shouted (‘We have a SPAD’) as they are to be spoken calmly. Words may be written, too, on paper (in training records, on worksheets) or appear on computer displays. But what is crucial is that these words form a part of what is going on. They do not stand outside the process itself. In this they are different from most of the words at Inquiries where people tend to talk about ‘decision making’ (or other events) that have taken place elsewhere. In the control room words are one kind of element among many. There are other signals to respond to (for instance audible alarms warning of seven different kinds of danger), and to send out (by shifting between screens, using trackballs and keyboards). What is more, in the control room words are inseparably tied up with actions. The different alarm keys each work in a different way. Some send out warning signals to people who may or may not perceive and pay attention to them. And others may cut the power on large parts of the railway system.

If all goes well and the trains arrive on time at their destinations, then the work of the signalmen leads to ‘good’. If the trains come to a standstill, or, worse, if there an accident, it does not. But if it is not ‘good’, then how might one decompose the flow of events into separate entities to pinpoint a ‘wrong act’ or a ‘bad decision’? This is what the barrister is after at the Inquiry (where everyone is outside the process itself). He is discursively decomposing and recomposing the chain of events of the fatal day. It is what the Inquiry does when asking the signalmen to account for their actions second by second. But it goes against the logic ingrained in the practice itself. This is one in which different relevancies come together. Where they flow on, disrupt one another, go into turbulence, or suddenly form a vortex. Our point is not only that in the

daily practice of the control centre no single 'good' takes precedence over all the others. It is also that there are not multiple 'goods' waiting to be balanced in that practice. However much the 'good' of the control room is composed and put together (through assembling working hours, instructions, habits, keyboards, displays, signals, and so on) it cannot be satisfactorily divided into different components. Neither the work nor the 'good' it seeks to achieve are discursively distinguished. There are no discrete elements to be balanced or added up into coherence. It is all rather a matter of tinkering.

Viewed in this way, Mr Allen's statement 'I cannot recollect the time factor' takes on a different significance. It no longer looks like a possible attempt to avoid responsibility. Instead it indexes the way in which practice unfolds in uncertain and relatively unaccountable ways. It resists entanglement in a world of decomposition and recomposition, and stays faithful to the process of tinkering towards the good implied in the practice of the control centre. It is a refusal, or an inability, to submit to the idea that 'the good' of the control centre is accountable elsewhere, whether as a matter of managerialist trade-offs or as an absolutist utopian commitment to some articulable end. And it is as far away as one can get from mobile utopias that know it all, but do so little. Tinkering towards the good, we want to suggest, is set of local and embodied entanglements. Of doing, without knowledge-in-words that is separable from it.

Unsurprisingly, then, it is difficult to articulate the practices of tinkering at the Inquiry<sup>63</sup>. The latter spends several days trying to unravel the mysteries of the control centre, to put them into words. And despite all this effort it proves almost impossible to talk about the practical tinkering of the signalmen in a way that doesn't immediately make them seem shoddy, sloppy, slow off the mark, or distracted. This should not surprise us very much. After all, a variety of traditions in social science have suggested that the flow of practice converts only partially into words. There is always something incomplete about such a translation – our own account above included. Translation is always also a betrayal<sup>64</sup>. But what turns this banal fact into a problem, is that when an embodied and localised version of the good is betrayed in a translation, it very easily take the features of a bad:

'On any view, [the delay] cannot be justified, although it can perhaps be explained by the prevailing practice at Slough IECC'.<sup>65</sup>

The accusation that the work of the signalmen was 'bad' is moderated. There is a 'prevailing practice' that (perhaps!) forms an 'explanation' for it. But an explanation falls short of the good more highly appreciated at an Inquiry, that of 'justification'. So this is what is lost when one accepts that the barrister's talk and Mr Allen's story at the Inquiry are the same. What becomes invisible is that the work of Mr Allen and his colleagues simply cannot be represented in words, let alone in the particular way of talking appropriate to an inquiry. For their day-to-day practice of tinkering doesn't allow discursive decomposition and overall justification. While in an Inquiry silence is impossible. Silent work gets turned into a refusal to talk. Having little to say comes

out in the form of the repeated and embarrassed acknowledgement that: 'I do not remember'.<sup>66</sup>

## ***Different Utopias***

Utopianism, as Louis Marin observed, is about a happy place that is not a place<sup>67</sup>. It disentangles itself from the mundanities and complexities of situated practices and locates itself in a discursive space instead. This is not just a matter of striving after the good (or maybe a combination of goods) but a very particular mode of doing so.

The first mode of striving after the good we have considered is obviously utopian. We have called it mobile utopia. This expresses itself in a relatively free floating discourse, far removed from an urgent commitment to act. It tends to come in the form of accusations. The accused have failed to meet some high standard, or another. This is the trick of mobile utopianism: that it does not stick to anything for long. Unlike absolutism it does not press a single good. And unlike managerialism, it does not painstakingly try to balance various goods against each other. Mobile utopia is not situated in some specific place but neither does it attempt an overview. Instead there are repeated moments of heated indignation. And each time a good-that-wasn't-realised is projected as the counterfactual of an actual situation. But when they are juxtaposed these moments leave a sense of lack, of failure. And of empty hands.

Then we considered absolutism. Here again there is accusation. The good, not any good, but the good is neglected, the good that should have taken precedence over all the others. The rhetorical shape of absolutism stems from a time and place where a single authority could seek to impose a single good. Absolutism was an imposed utopia (and one that was bound to get nasty if only because it was imposed). But the absolutism we have witnessed here is quite different. If people with little power want to get themselves heard in crowded and noisy discursive arenas, they need to speak with extra force. And one of the techniques for doing is to try to borrow power from the former absolutists. A value may be made more valuable by calling it absolute. This is a utopianism of despair.

At first sight managerialism does not seem utopian. This is because it is an answer to the imperfections of the world. It recognises that different 'goods' are in tension with one another, and understands that balancing between them is a crucial but precarious task. But we have argued that there is a third mode of utopianism at work here. For in managerialist discourse we discover a shift to procedure. Handling the tensions between different goods in a proper way, balancing between them wisely, and being prepared to articulate one's actions and account for them – these are turned into meta-goods. Risk assessments, audits, Inquiries and other ways of staging accountability become powerful. No longer treated as managerial techniques among others, for which there may be a (delineated) place, they become the very space we are made to inhabit. A space in which endless reflexive questions are being asked, but one that is put beyond

question itself. Managerialism thus incorporates a hidden utopia. Reflexive and justificatory discourse is the good that it celebrates.

We have also considered one radically non-utopian mode of relating to the good: that of tinkering. This is quite different because it is located. It takes place somewhere, and rather than being an afterthought it is immersed in the present. It has less to do with thought, but is more a matter of matter, of the body, of practice. A practice in which there are material objects, flickering screens, bleeping sounds, rails, weather. A practice, moreover, where one may have worked for four hours, or twelve, or be out for a tea break; and where one may (or may not) be worried about one's colleagues. The good, in this place, is neither single nor divided. But if tinkering is both complex and non-discursive this has unfortunate consequences elsewhere. It means that its specific modes of dealing with the good tend to look like failures when they are called to account in other contexts. Discursive justifications always betray the specificities of tinkering.

What does this imply? Obviously we do not suggest tinkering should always be accepted at face value. It does not necessarily bring goods. But if justifications of tinkering do not get to its heart, then this suggests that we need instead to shift questions, and to explore how goods are actually enacted in the practices of tinkering. What is avoided as bad practice? What is sought after? How do people get committed to their work, come to care for what is at stake there? These are the kinds of questions that need to be explored. For if we are committed to and care for the quality of practice/s then further high modern self-reflection and additional requirements for accountability are unlikely to help. Instead tinkering deserves to be investigated in its own terms. However difficult it may be to find the words. However much terms are not what tinkering is about.

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## Endnotes

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<sup>1</sup> There were many additional actors – which included the Rail Regulator, the relevant part of the government safety authority, the Health and Safety Executive, a newly created Strategic Rail Authority and (important for the present story) a plethora of subcontractors, and sub-subcontractors, some large and some not, which worked for Railtrack and maintained the railway infrastructure. In late 2001 (as we complete the final draft of this paper) the future structure of the industry is uncertain. In large part because of the events discussed in this paper, Railtrack is in receivership.

<sup>2</sup> Selby, though a serious accident, is somewhat different. As we suggest below, it appears in general that the responsibility for it is taken not to lie with the railway system.

<sup>3</sup> See <http://www.southall-rail-inquiry.gov.uk>

<sup>4</sup> The details are drawn in part from the links shown on the official Health and Safety Executive Railway Inspectorate's web site. See <http://www.hse.gov.uk/railway/rhome.htm#Accident>.

<sup>5</sup> Details are to be found at the Inquiry's website, at <http://www.lgri.org.uk/> and in the Cullen report. See (Cullen 2001)

<sup>6</sup> For further details see <http://www.hse.gov.uk/railway/hatfield/interim2.htm>

<sup>7</sup> See the Financial Times website for details of the cost (estimated at £600 million on January 15<sup>th</sup>, 2001).

<http://news.ft.com/ft/gx.cgi/ftc?pagename=View&c=Article&cid=FT3NCP0VZHC&live=true&tagid=ZZZYF712BOC&subheading=transport>. Note that a large part of this bill represented compensation for the Train Operating Companies.

<sup>8</sup> These are explored more fully in Law (2000).

<sup>9</sup> In the field of science studies, the shift from articulating norms to studying the way they are practised was made in relation to epistemology. For exemplary studies see Barnes (1977), Latour and Woolgar (1979) Shapin and Schaffer (1985). In political theory there has been an analogous shift from justifying good action to analysis of how people justify their actions in the work of Boltanski and Thévenot and their colleagues. See, for instance, Boltanski and Thévenot (1987), Boltanski (1990), Thévenot (2002), and Dodier (1993). The shift is also currently being made in ethics. See, for instance, Harbers, Mol and Stollmeijer, (2002).

<sup>10</sup> One might explore how the 'goodness' of particular activities grounded: in scientific studies (for instance through trials); in reasoning and argument (as in ethics); and no doubt there are other possibilities. Or one might analyse how people relate to what they themselves take to be good: proudly, reluctantly, ambivalently? And then again: one might analyse what failure is turned into: an occasion for guilt, for shame, for punishment, for learning, for retreating? The list of possible questions is long, and the present paper is simply the first step in a much larger project of studying doing good.

<sup>11</sup> Quoted in <http://www.univ-nancy2.fr/CEAA/CRESAB/text-railways-nuss.htm>

<sup>12</sup> These terms entanglement and disentanglement have been developed by Michel Callon and Vololona Rabeharisoa. See Callon (1998a; 1998b) and Callon and Rabeharisoa (1999).

<sup>13</sup> GNER, the company which owned the passenger train was described in the Financial Times in March 2<sup>nd</sup> 2000 as talking of a 'freak sequence of events'.  
<http://globalarchive.ft.com/globalarchive/articles.html?id=010301001437&query=Selby>

<sup>14</sup> The quotation is from the Guardian leader of March 1<sup>st</sup>, 2000 available at  
<http://www.guardian.co.uk/selby/story/0,7369,444635,00.html>.

<sup>15</sup> The Guardian March 2<sup>nd</sup>, page 25.

<sup>16</sup> And the public arena propensity to seek justifications when something goes wrong was reflected in a BBC encounter with the weary government minister, Mr John Prescott, when he visited the Selby site a few hours after the accident. In this the BBC tried to cross-examine him about the inadequacy of the motorway safety barrier. This exchange appeared on the 1.00 pm News on BBC1 on 28<sup>th</sup> February, 2001.

<sup>17</sup> <http://www.guardian.co.uk/selby/story/0,7369,444348,00.html> 37:4 (153:156)), 2<sup>nd</sup> March, 2001.

<sup>18</sup>

<http://globalarchive.ft.com/globalarchive/articles.html?id=010301001437&query=Selby> ; 39:2 (57:59), 1<sup>st</sup> March, 2001

<sup>19</sup> <http://www.guardian.co.uk/selby/story/0,7369,445299,00.html>; 36:1 (131:134), 2nd March, 2001.

<sup>20</sup> [http://news.bbc.co.uk/hi/english/uk/newsid\\_1196000/1196790.stm](http://news.bbc.co.uk/hi/english/uk/newsid_1196000/1196790.stm) 43:1 (76:78), 2<sup>nd</sup> March 2001.

<sup>21</sup>

<http://news.ft.com/ft/gx.cgi/ftc?pagename=View&c=Article&cid=FT36IGKIHJC&live=true> (20:11 (101:107)) (FT, 22nd Feb, 2001, page 4)

<sup>22</sup> [http://news.bbc.co.uk/hi/english/uk/newsid\\_507000/507691.stm](http://news.bbc.co.uk/hi/english/uk/newsid_507000/507691.stm) 50:1 (57:70), 6<sup>th</sup> November, 1999.

<sup>23</sup> [http://news.bbc.co.uk/hi/english/uk/newsid\\_232000/232283.stm](http://news.bbc.co.uk/hi/english/uk/newsid_232000/232283.stm) 45:1 (67:69), 1<sup>st</sup> December, 1998

<sup>24</sup> Slam doors, present in every compartment and operated by passengers, were the standard on post-war local routes. These have since been replaced by many fewer doors that are operated by the driver or guard.

<sup>25</sup> The website, which includes transcripts of all evidence, is at [www.lgri.org.uk/](http://www.lgri.org.uk/).

<sup>26</sup> See the Third Interim Report of the Health and Safety Executive, Section 2. The Report is published at <http://www.hse.gov.uk/railway/paddrail/interim3.htm>.

<sup>27</sup> [www.lgri.org.uk/transcript/11mayam.htm](http://www.lgri.org.uk/transcript/11mayam.htm) (4:11 pages 9-13 (290:392)).

<sup>28</sup> From Alan Macro's personal home page at <http://www.amacro.freemove.co.uk/rail-safety.htm#ATP>.

<sup>29</sup> Both these citations are from Privatisation Disaster: Time to RENATIONALISE the railways! Rob Sewell Socialist Appeal Railways special, Socialist Appeal, Issue 73, at [www.socialist.net/73/railways.html](http://www.socialist.net/73/railways.html).

<sup>30</sup> 'How a mistake led to mayhem', Kevin Maguire, Matt Wells and Keith Harper The Guardian, Thursday October 7, 1999, at

<http://www.gu.com/traincrash/Story/0,2763,201534,00.html>

<sup>31</sup> See <http://www.lgri.org.uk/transcript2/10novam.htm>, page 31, and additional BBC reporting at [http://news.bbc.co.uk/hi/english/uk/newsid\\_1016000/1016708.stm](http://news.bbc.co.uk/hi/english/uk/newsid_1016000/1016708.stm).

<sup>32</sup> See Max Weber (1978), pages 24-26.

<sup>33</sup> In the context of ATP this raises serious difficulties. ATP is expensive, yes, but its reliability has also been questioned. Furthermore, there are ever-present questions about the way in which safety systems can increase as well as decrease hazards. See Charles Perrow (1984) and John Law (2000).

<sup>34</sup> We are grateful to Jeannette Pols for suggesting this argument to us.

<sup>35</sup> Louise Christian, The Guardian, Wednesday October 6, 1999, 'They kill to save money: Why haven't proper rail safety measures been introduced?'

<http://www.guardianunlimited.co.uk/traincrash/Story/0,2763,201546,00.html>

<sup>36</sup> See the House of Commons Environment, Transport and Regional Affairs Committee, First Report, 'Recent Events on the Railway', published at

<http://www.publications.parliament.uk/pa/cm200001/cmselect/cmenvtra/17/1703.htm#a1>

<sup>37</sup>

<http://www.publications.parliament.uk/pa/cm200001/cmselect/cmenvtra/17/0110105.htm> 26:1 (27:34) paragraph 62. (House of Commons - Environment, Transport and Regional Affairs - Minutes of Evidence, Select Committee on Environment, Transport and Regional Affairs Minutes of Evidence).

<sup>38</sup>

<http://www.publications.parliament.uk/pa/cm200001/cmselect/cmenvtra/17/0110104.htm>, 25:9 (55:63) paragraph 41. (House of Commons - Environment, Transport and Regional Affairs - Minutes of Evidence, Select Committee on Environment, Transport and Regional Affairs Minutes of Evidence).

<sup>39</sup> Interview with Steve Marshall by Juliette Jowit, Financial Times, 7<sup>th</sup> December, 2000; at <http://news.ft.com/ft/gx.cgi/ftc?pagename=View&c=Article&cid=FT33MKCQGGC&live=true> (4:17 (77:92))

<sup>40</sup> <http://www.publications.parliament.uk/pa/cm200001/cmselect/cmenvtra/17/1703.htm#a1> 32:17 (524:541) paragraph 21 (House of Commons - Environment, Transport And Regional Affairs - First Report Select Committee on Environment, Transport and Regional Affairs).

<sup>41</sup> The compromise may, in part, be between long and short term goods. See Interview with Steve Marshall by Juliette Jowit, Financial Times, 7<sup>th</sup> December, 2000; at <http://news.ft.com/ft/gx.cgi/ftc?pagename=View&c=Article&cid=FT33MKCQGGC&live=true> (4:17 (77:92)).

<sup>42</sup>

<http://www.publications.parliament.uk/pa/cm200001/cmselect/cmenvtra/17/0110104.htm>, 25:9 (413:420) paragraph 58. (House of Commons - Environment, Transport and Regional Affairs - Minutes of Evidence, Select Committee on Environment, Transport and Regional Affairs Minutes of Evidence).

<sup>43</sup>

<http://www.publications.parliament.uk/pa/cm200001/cmselect/cmenvtra/17/01101010.htm>, 31:3 (181:190) paragraph 179. (House of Commons - Environment, Transport and Regional Affairs - Minutes of Evidence, Select Committee on Environment, Transport and Regional Affairs Minutes of Evidence).

<sup>44</sup> ‘Our clients ... observe that though Thames Turbo trains ... were not fitted with ATP on cost benefit grounds. Thames Trains’ cost benefit analysis concluded that over 20 years it would cost them £8.2 million .... This, it was calculated, would prevent only an estimated one fatality at a saving, valued at the standard 1998 Railtrack figure, of £2.49 million, together with a saving of £0.47 million in respect of disruption. The net cost of ATP was, thus, a mere £5.26 million over 20 years. .... It seems incomprehensible to my clients that the directors of Thames Trains, reflecting in 1998 on the 7 dead and 151 casualties of the Southall crash, refused to spend these modest sums ... In the same year, 1998, in which the Thames Trains directors rejected ATP fitment ... they paid out the dividend to shareholders of £4.23 million. In 1999 they paid a further dividend of £3.25 million. Our clients observe that by restricting their profits, Thames Trains could comfortably have paid in two years the whole 20-year cost to equip their trains with ATP ... and still given away well over £2 million in dividends.’

[www.lgri.org.uk/transcript/11mayam.htm](http://www.lgri.org.uk/transcript/11mayam.htm) (4:11 pages 9-13 (290:392))

<sup>45</sup> Ladbroke Grove Rail Inquiry, Transcript of Proceedings, morning of 18<sup>th</sup> July, 2000, page 75, lines 9-13; at <http://www.lgri.org.uk/18julam.htm> 89:40 (1987:1991) .

<sup>46</sup>

<http://www.publications.parliament.uk/pa/cm200001/cmselect/cmenvtra/17/0110107.htm>, 28:2 (96:118) paragraph 108. (House of Commons - Environment, Transport and Regional Affairs - Minutes of Evidence, Select Committee on Environment, Transport and Regional Affairs Minutes of Evidence).

<sup>47</sup> See Max Weber (1978), page 26.

<sup>48</sup> The term ‘drawing things together’ is the title of an important paper on centres of control by Bruno Latour. See Latour (1990).

<sup>49</sup> It may or may not, of course, experience the need to make its tradeoffs publicly accountable (and there are, as is obvious, also different publics – in the present context, the general press with its concern for safety, and the financial press which is more concerned with profit, investment and growth). The circumstances of the railway industry in the UK have certainly been unusual in the level of general accountability.

<sup>50</sup> The most obvious point of entry into this large literature is Anthony Giddens’ (1990).

<sup>51</sup> It is difficult to find any countervailing argument in the face of what appears to be a very general commitment by right and left alike to accountability in Euro-American public life. But for an important opening, see Luc Boltanski (1990).

<sup>52</sup> The quotation comes from [www.lgri.org.uk/transcript/30mayam.htm](http://www.lgri.org.uk/transcript/30mayam.htm) - 92:24 (1618:1619), page 58, lines 6-7.

<sup>53</sup> This account is derived from [www.lgri.org.uk/transcript/30mayam.htm](http://www.lgri.org.uk/transcript/30mayam.htm) (1064ff), page 36 ff, and [www.lgri.org.uk/transcript/30maypm.htm](http://www.lgri.org.uk/transcript/30maypm.htm).

<sup>54</sup> [www.lgri.org.uk/transcript/30mayam.htm](http://www.lgri.org.uk/transcript/30mayam.htm) - 92:7 (1009:1014), page 24, lines 33-35

<sup>55</sup> [www.lgri.org.uk/transcript/27julpm.htm](http://www.lgri.org.uk/transcript/27julpm.htm) - 84:31 (1589:1602), page 50 lines 16-25

<sup>56</sup> The testimony also explores something else that he didn’t do. This was to press the ‘signals on’ button. This is a way of rebooting the entire signal system, but also sets every signal in the area to red. If the signals on button had been pressed it might, perhaps, have averted the accident. It would also, and this is part of the argument, have caused large disruption to the rail system and a series of dangerous emergency stops by

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other trains. See [www.lgri.org.uk/transcript/30mayam.htm](http://www.lgri.org.uk/transcript/30mayam.htm) - 92:19 (1834:1843), page 66.

<sup>57</sup> [www.lgri.org.uk/transcript/30mayam.htm](http://www.lgri.org.uk/transcript/30mayam.htm) (1119), pages 39-40, lines 25-3.

<sup>58</sup> [www.lgri.org.uk/transcript/30maypm.htm](http://www.lgri.org.uk/transcript/30maypm.htm) 93:17 (493:499), page 175, lines 5-13.

<sup>59</sup> [www.lgri.org.uk/transcript/30maypm.htm](http://www.lgri.org.uk/transcript/30maypm.htm) 93:16 (1872:1881), pages 121-122, lines 22-1.

<sup>60</sup> Cullen (2001), page 3.

<sup>61</sup> ““The amount of time taken by Signaller Allen to react to the occurrence of the SPAD does not seem unreasonable, given the decision-making process required based upon the technology, in particular the quality of the displays available to him.”. At [www.lgri.org.uk/transcript/30maypm.htm](http://www.lgri.org.uk/transcript/30maypm.htm) - 93:3 (359:371) page 116, lines 21-25. The quotation comes from the report of the official Health and Safety Laboratory.

<sup>62</sup> [www.lgri.org.uk/transcript/30maypm.htm](http://www.lgri.org.uk/transcript/30maypm.htm) - 93:18 (44:50) page 105, lines 16-22.

<sup>63</sup> There is a large literature on tacit knowledge and the relation between formulations and practices. See, for instance, Harry Collins (1975), and Lucy Suchman (1987).

<sup>64</sup> See Michel Callon (1986).

<sup>65</sup> [www.lgri.org.uk/transcript/28julam.htm](http://www.lgri.org.uk/transcript/28julam.htm) - 85:22 (1217:1221), page 43, lines 9-13.

<sup>66</sup> In an interview with sociologists a person is similarly pushed into talking. Faced with an informant who didn't do so, Callon and Rabeharisoa began to appreciate this refusal as a political act – or rather an attempt to remain private, outside the political arena where one needs to justify one's actions. See Callon and Rabeharisoa (1999).

<sup>67</sup> On utopia, see Louis Marin (1993) and Kevin Hetherington (1997). On purity and impurity see Bruno Latour (1993). On the disentanglement of discursive locations to produce happy and simple places, considered in another mode, see Donna Haraway (1997).